

BURN-RELATED FACTORS AFFECTING ANXIETY, DEPRESSION AND SELF-ESTEEM IN BURN PATIENTS: AN EXPLORATORY STUDY

FACTEURS LIÉS À LA BRÛLURE INFLUENÇANT L'ANXIÉTÉ, LA DÉPRESSION ET L'ESTIME DE SOI DES PATIENTS: ÉTUDE PRÉLIMINAIRE

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SUMMARY. Burns are physically, psychologically and economically challenging injuries, and the factors leading to them are many and under-studied. The aim of the current study was to assess level of anxiety, depression and self-esteem in burn patients, and look at various burn-related variables that affect them. This cross-sectional study included 100 patients with burn injuries admitted to a tertiary care private hospital in an urban metropolis in India. The patients were assessed for anxiety, depression and self-esteem using the Hamilton anxiety rating scale, Hamilton depression rating scale and Rosenberg self-esteem scale respectively. Assessment was carried out within 2-8 weeks of injury following medical stabilization. The data was tabulated and statistically analyzed. The study sample was predominantly male (54%), married (69%), with a mean age of 34.1 ± 10.8 years. Accidental burns (94%) were the most common modality of injury. The majority (46%) suffered burns involving 20-59% total body surface area (TBSA), and facial burns were present (57%). No significant association was found between TBSA and anxiety, depression or self-esteem, and the same was true for facial burns. Deep burns, however, were significantly associated with anxiety ($p=0.03$) and depression ($p=0.0002$). High rates of anxiety and depression are associated with burn injuries and related to burn depth. Adjustment and recovery in these patients depends on various other factors like the patient's psychological status, nature/extent of the injury and ensuing medical care. Further research is warranted to reveal the magnitude and predictors of psychological problems in burn patients.

Keywords: depression, anxiety, burns, self-esteem, deep burns, facial burns

RÉSUMÉ. Les brûlures ont des conséquences physiques, psychologiques et économiques aux facteurs favorisant encore peu étudiés. Le but de cette étude est d'évaluer les niveaux de ces conséquences et les variables éventuellement corrélées. Elle a inclus 100 patients hospitalisés dans un hôpital privé référent d'une métropole indienne. L'anxiété, la dépression et l'estime de soi ont été mesurées respectivement par les échelles d'anxiété et de dépression de Hamilton et l'échelle d'estime de soi de Rosenberg, les patients ayant été vus 2 à 8 semaines après stabilisation. Les patients étaient des hommes (54%) mariés (69%), âgés de $34,1 \pm 10,8$ ans. Les brûlures étaient accidentelles dans leur grande majorité (94%). Presque la moitié (46%) des brûlures touchaient 20 à 59% de la SCT avec une atteinte du visage dans 57% des cas. Ni cette atteinte de la face ni la surface brûlée n'étaient corrélées aux paramètres étudiés. En revanche, les brûlures profondes étaient fréquemment associées à l'anxiété ($p=0,03$) et à la dépression ($p=0,0002$). La guérison et la réintégration de ces patients dépendent aussi d'autres facteurs comme l'état psycho-social préalable, la nature et l'étendue des brûlures, la prise en charge. Des études supplémentaires sont nécessaires pour préciser l'étendue de ces conséquences psychologiques et leurs facteurs prédictifs.

Mots-clés: dépression, anxiété, brûlures, estime de soi, brûlures profondes, brûlures du visage

Introduction

Burn injuries are defined as injuries caused by the application of heat, chemicals, electrical current or radiation to the external or internal surface of the body, which causes destruction of the tissue.¹ Burns are acute, unpredictable and devastating forms of trauma which affect both the physical and psychological health of the victim.² With improving medical care, many patients survive the acute phase of recovery and are

left to deal with the long-term psychological effects of burns, which are complex and vary from patient to patient.³ The most common psychological problems faced by burn injury patients are pain, anxiety, depression, post-traumatic stress disorder, concern about bodily disfigurement, social isolation and financial burden due to the prolonged duration of hospitalization and treatment required.⁴ Resolving the psychological problems that affect burn injury patients leads to a greater enhancement of their quality of life and wellbeing.⁵ Non resolution of these

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problems in the acute phase may cause them to progress to chronic psychiatric morbidities.⁶

Burn-related pain during surgical procedures and physical rehabilitation is known to be associated with anxiety, and studies have shown that procedural-pain-associated anxiety increases as therapy progresses.⁷ Pain, anxiety and distress are known to be associated with post-traumatic stress disorder in burn victims, whereas patients with higher rates of anxiety report more intense background pain on subjective assessment.⁸ Predisposing factors such as grief and mourning, pain, social isolation during hospitalization and pre-burn depression have been associated with post burn depression.⁹ Burn scars often lead to disfigurement, potentially causing an altered body image, lack of effective social functioning, and poor quality of life for the patient.¹⁰ Subjective body image dissatisfaction is an important predictor of post burn psychological functioning 12 months post injury.¹¹ A longer stay in the hospital has been associated with greater social isolation, a sense of loss of independence, economic dependency, loss of socio-occupational functioning and increased distress in patients.¹² Despite the overlapping interface between burn injuries and psychiatric morbidity, psychological help for burn patients is still under-addressed, and there is a need for a psychiatric team in the burns unit.¹³

Burn injury to the head, neck and face is associated with visible scars. Scarring and contractures are among the most common and difficult sequelae to treat in burn injury. Scars in visible areas are associated with social anxiety, avoidance and poor quality of life: in contrast to visibility, severity of scar was not associated with distress.¹⁴ Facial burns in women are associated with greater risk of depression, and research has suggested that women are generally more vulnerable to the consequences of disfigurement.¹⁵ With increasing rates of survival among burn patients, it is important to address the psychological needs of burn survivors, with the aim of achieving a quality of life and functioning as close as possible to the pre-burn level, and successful reintegration of the survivor into society with a healthy mind and body.¹⁶ The aim of the current study was to study the relationship between total body surface area involved in burn injury and anxiety, depression and self-esteem in burn patients. The study also assessed the relationship between site of burn and anxiety, depression and self-esteem in the subjects.

Methodology

Study setting and background

The current study is a cross-sectional study undertaken at a tertiary care private hospital in an urban metropolis in India over a 12-month period from January 1st 2013 to January 1st 2014. Both outpatients and inpatients from the burns unit were part of the study. The study was approved by the institutional ethics committee. A total of 143 patients were screened, and 100 patients meeting the inclusion criteria were enrolled in the study.

Inclusion criteria

The inclusion criteria included male and female burn injury patients aged between 18-65 years, admitted or followed up in the burns department, who agreed to being interviewed and were within the period of 2-8 weeks post burn injury. Patients diagnosed with psychiatric disorders (except nicotine dependence) before the burn injury were excluded from the study.

Parameters assessed in the study

- Burn-related variables: total body surface area burned, burn depth and facial involvement were assessed by the surgical team on admission to the burns ward. These data were noted by us on a semi-structured proforma from the case file.
- Psychiatric morbidity: psychiatric morbidity in the patients was assessed using the specific scales, along with a clinical interview and mental status examination, and clinical diagnostic assessment by two of the authors.

Scales used in the assessment

- Hamilton Anxiety Rating Scale (HAM-A): the scale consists of 14 items designed to assess the severity of a patient's anxiety. Each of the 14 items contains a number of symptoms, and each group of symptoms is rated on a scale of 0-4, with 4 being the most severe. All of these scores are used to compute an overarching score that indicates a person's anxiety severity. Upon completion of the evaluation, the clinician compiles a total, composite score based upon the summation of each of the 14 individually rated items. This calculation will yield a comprehensive score in the range of 0 to 56. A score of 17 or less indicates mild anxiety. A score from 18 to 24 indicates mild to moderate anxiety. Lastly, a score of 25 to 30 indicates moderate to severe anxiety. The scale has a good reliability and validity in clinical populations and is one of the oldest anxiety rating scales in use.¹⁷
- Hamilton Depression Rating Scale (HAM-D): the scale (HAM-D) has proven useful for many years as a way of determining a patient's level of depression before, during, and after treatment. It is clinician administered and made up of 21 items, though scoring is based on the first 17 only. It generally takes 15-20 minutes to complete the interview and score the results. Eight items are scored on a 5-point scale, ranging from 0 (= not present) to 4 (= severe), and 9 are scored from 0-2 in the same manner. A score in the range of 8-13 indicates mild depression, 14-18 indicates moderate depression and 19-22 indicates severe depression.¹⁸
- Rosenberg Self-Esteem Scale (RSES): the RSES is designed similar to social-survey questionnaires. It is a 10-item, Likert-type scale with items scored on a 4-point scale, ranging from 'strongly agree' to 'strongly disagree'. Five of the items have positively worded statements and 5 have negatively worded ones. The scale measures state of self-esteem by asking the respondents to reflect on their current feelings. The Rosenberg self-esteem scale is considered a reliable and valid quantitative tool for self-esteem assessment.¹⁹

Four of the 100 patients recruited developed delirium during the acute phase of recovery and thus were interviewed 8 weeks after their delirium had subsided. Two patients had suicidal burns but no psychiatric diagnosis or treatment prior to or after admission, so they were included in the study.

Statistical Analysis

Data was analyzed with the help of SSPS software version 13.0 using basic descriptive statistics such as mean, standard deviation and median. The Chi square test was used where appropriate.

Table I - Burn-related factors in the sample

Mode of injury	Males (n=54)	Females (n=46)
Accidental	51	43
Homicidal	1	1
Suicidal	2	2
Percentage of total body surface area involved (n=100)		
20-39% (Grade I)	46	
40-59% (Grade II)	37	
60-70% (Grade III)	17	
(Since n=100, n and percentage value are the same)		

Table II - Anxiety scores in relation to various factors

Severity of anxiety	Males (n=54)	Females (n=46)	Total (n=100)
Mild	29	23	52
Moderate	14	17	31
Severe	11	6	17
Severity of anxiety	Grade I burns (n=46)	Grade II burns (n=37)	Grade III burns (n=17)
	n (%)		
Mild	22 (47.8%)	20 (54.1%)	10 (58.8%)
Moderate	15 (32.6%)	12 (32.4%)	4 (23.5%)
Severe	9 (19.6%)	5 (13.5%)	3 (17.6%)
$\chi^2 = 1.1521$, p = 0.8852 NS			
Severity of anxiety	Deep burns (n=51)	Superficial burns (n=49)	Statistics
	n (%)		
Mild	21 (41.2%)	31 (63.3%)	$\chi^2 = 6.941$ p = 0.0311*
Moderate	17 (33.3%)	14 (28.5%)	
Severe	13 (25.5%)	4 (8.2%)	
Chi square (χ^2) test used in the assessment (p<0.05 = significant) (NS – not significant, *significant)			

Results

Socio-demographic profile of the cases

Fifty-four of the 100 patients who were recruited were male and 46 were female. The age range was 19-64 years, and the average age of participants was 34.15 ± 10.8 years. The majority of patients in the sample were Hindu (64%) followed by Muslim (27%) and Christians (6%). Additionally, 69 subjects were married and 24 unmarried. One third of the sample (n=33) were housewives, 47 were employed males, and 10 were working women. The majority of the sample (n=46) were educated up to high school level (class 9-12) followed by higher education (beyond class 12) (n=30).

Burn-related factors

Accidental burns were found to be the most common cause of burn injury among both males as well as females (n=94). The majority of burn victims had burns in the range of 20-59% total body surface area involvement. Moreover, 51 subjects had deep burns and 49 had superficial burns. In this study we found 57 subjects had facial burns: 32 males and 25 females. The majority of subjects had Grade I and II burns (Table I). Grade I meant 20-39% burns, Grade II meant 40-59% burns and Grade III meant 60-70% burns.

Anxiety in relation to burns

The entire sample experienced anxiety symptoms ranging

Table III - Depression scores in relation to various factors

Severity of depression	Males (n=54)	Females (n=46)	Total (n=100)
Normal	4	1	5
Mild	16	10	26
Moderate	6	9	15
Severe	11	6	17
Very severe	17	20	37
Severity of depression	Grade I burns (n=46)	Grade II burns (n=37)	Grade III burns (n=17)
	n (%)		
Normal	2 (4.3 %)	3 (8.1%)	————
Mild	12 (26.1%)	10 (27%)	4 (23.5%)
Moderate	6 (13.0%)	4 (10.8%)	5 (29.4%)
Severe	9 (19.6%)	6 (16.2%)	2 (11.8%)
Very severe	17 (37.1%)	14 (37.8%)	6 (35.3%)
$\chi^2 = 5.0492$, p = 0.7523 NS			
Severity of depression	Deep burns (n=51)	Superficial burns (n=49)	Statistics
	n (%)		
Normal	5 (9.8%)	————	
Mild	11 (21.7%)	15 (30.7%)	$\chi^2 = 21.426$
Moderate	4 (7.8%)	11 (22.4%)	p = 0.0002*
Severe	4 (7.8%)	13 (26.5%)	
Very severe	27 (52.9%)	10 (20.4%)	
Severity of depression	Facial burns n (%)		Statistics
	Yes (n=57)	No (n=43)	
Normal	1 (1.7%)	4 (9.2%)	$\chi^2 = 7.7664$ p = 0.1006 NS
Mild	12 (21.1%)	14 (32.6%)	
Moderate	7 (12.3%)	8 (18.6%)	
Severe	11 (19.3%)	6 (14.0%)	
Very severe	26 (45.6%)	11 (25.6%)	
Chi square (χ^2) test used in the assessment (p<0.05 = significant) (NS – not significant, *significant)			

from mild to moderate. The occurrence of anxiety symptoms was slightly higher in males. 19.6% of the Grade I cases had severe anxiety, compared to 13.5% of the Grade II cases and 17.6% of the Grade III cases, but the difference was not statistically significant. 25.5% of those with deep burns had severe anxiety, compared to 8.2% of those with superficial burns ($p = 0.0311$) (Table II).

Depression in relation to burns

A vast majority (n=95) of the sample demonstrated depressive symptoms. Most of them experienced moderate to very severe symptoms. Very severe symptoms were slightly more common among female subjects than males. 56.6% of the Grade I cases had severe to very severe depression, compared to 54.0% of the Grade II cases and 47.1% of the Grade III cases, but the difference was not statistically significant. 64.9% of those with facial burns had severe to very severe depression. 52.9% of cases with deep burns had very severe depression, compared to 20.4% of those who had superficial burns ($p = 0.0002$) (Table III).

Self-esteem in relation to burns

A total of 71.7% of Grade I cases had normal self-esteem, compared to 64.9% of Grade II and 58.8% of Grade III cases, but the difference was not statistically significant. Among those with deep burns, 47.1% had normal self-esteem compared to 87.8% of cases with superficial burns (Table IV).

Table IV - Self-esteem scores in relation to various factors

Self-esteem scores	Grade I burns (n=46)	Grade II burns (n=37)	Grade III burns (n=17)
	n (%)		
Low	13 (28.3%)	13 (35.1%)	7 (41.2%)
Normal	33 (71.7%)	24 (64.9%)	10 (58.8%)
$\chi^2 = 1.0576$, p = 0.5893 NS			
Self-esteem scores	Deep burns (n=51)	Superficial burns (n=49)	Statistics
	n (%)		
Low	21 (41.2%)	31 (63.3%)	$\chi^2 = 1.6347$ p = 0.2010 NS
Normal	17 (33.3%)	14 (28.5%)	
Chi square (χ^2) test used in the assessment (p<0.05 = significant) (NS – not significant, *significant)			

Discussion

The main focus of the current study was to assess the presence of common psychiatric problems in victims of burn injuries and to understand the different burn variables that affect the psychological outcome of patients. The socio-demographic characteristics of the subjects matched those of epidemiological data on burns available in Indian studies.²⁰⁻²² Accidental burns were the most common cause of injury, which supports the findings in the literature worldwide on causative factors with regards to burn injuries.²³

An unusual finding in our study was a higher prevalence of anxiety in male patients. Most studies have reported a similar prevalence across both sexes.²⁴ Potential factors that may have contributed to a higher prevalence of anxiety in males could be a fear of disfigurement, worries about the future and return to work, along with the high cost of treatment. The majority of males in the study were working and married, but differences on the basis of marital status and employment were not studied, as they were not in keeping with the aims of the study.

Analysis of the relationship between grade of burn and depression showed that the extent of total body surface area (TBSA) involved did not have any bearing on the severity of depression seen in the subjects. This was in keeping with findings reported in the literature.²⁵ The same was true for anxiety. This, however, was in contrast with literature showing a positive association between total body surface area involved and severity of anxiety.²⁶

In keeping with previous research, the association between

facial burns and severity of depression remains high, thereby showing that facial disfigurement is a risk factor for post burn depression.²⁷ Different methods and rating scales used may account for differences between our study and reported research regarding findings in some areas. Time of assessment post burn also plays a vital role.

Another interesting result in this study was the statistically significant association between deep burns and anxiety, depression and low self-esteem. Research shows that full thickness burns affect body image. Patients with greater than 20% total body surface area full thickness burns were more concerned about their health and experienced higher levels of anxiety.²⁸ This may have been related to the longer duration of treatment and greater number of procedures they may have undergone, along with the financial costs of treatment. The medication these patients were on, including painkillers, as well as the dressings used also play a role, but these were not assessed in detail in the study.

The study was a single center cross-sectional study, and the sample may not be representative of the entire burns population. Assessment of psychiatric comorbidity was carried out only once, thus it may under report the occurrence of psychiatric sequelae occurring later in the disease course as there was no long-term follow up. Rating scales used may vary from study to study, further confusing the results obtained. We also failed to take cognizance of various personal, social and environmental factors that may have contributed to psychological problems in the patients.

Conclusion

Psychiatric problems are very common in burn survivors. A range of psychological problems such as anxiety, depression, low self-esteem and trauma-related disorders can occur in these patients. Severity of burns, total body surface area involved, site of burns and burn depth all have a role in the development of psychiatric problems. Social and environmental factors may also play a part in the genesis of psychiatric sequelae. There is a dearth of knowledge about the psychological needs of burn survivors. It is imperative that all burn patients be routinely screened for psychiatric morbidity, and all cases be assessed by a psychiatrist at least once during their inpatient stay. Sensitization of the burns ward staff to the psychological needs of the patient is equally important. Future research must focus on long-term studies in diverse population groups to elucidate further relationships and factors at the interface of psychiatric problems in burn injuries.

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